

### **Soil Investigation**

**Problem:** State Program is unable to characterize source soils at this site. Soil sampling is limited to unsaturated soil by their regulatory rules. Saturated soil contamination is a significant source at this very old contamination site.

Saturated soil is likely source soil at this site

- 1) Drill Cuttings showed floating free product on cuttings from below the water table suggesting saturated source soils.
- 2) At 2 locations, EPA collected soil samples from a depth that was not allowed under the state program (saturated conditions). The results showed significant saturated source soils that were not detected in the overlying unsaturated soils

**Problem:** Soil field screening (PID results), boring logs, reports and submittals have not been shared with the Tribe nor EPA from soil investigation work completed in September 2015. This limits cross sections, a viable conceptual site model, and degree and extent of contamination determinations.

Noted. We have not received all the field notes, borings, etc. from the 2015 PECFA field effort. We have told DNR that we want the information and asked REI for the information in December. It has not yet been delivered. The submittal of information in a timely manner is addressed in our Kozak letter, which requires information to be submitted according to a schedule.

**Therefore:** The State Program is limited by its own regulations and is incapable of assessing saturated source soils.

PECFA does not allow for collection of soil samples below the water table. We collected some samples from below the water table during the PECFA field effort to help define contaminants, but these are not true soil samples for the purpose of defining soil contamination.

Highly contaminated groundwater at the water table extends east of the Tower soil source area. The reason for this is not yet understood. It may be related to historical private well pumping at the former restaurant to the east of the Tower site. Overlying soils are not contaminated in this area. The highly contaminated groundwater in this area is likely acting as a contributing source for downgradient contamination, but EPA would also normally define these areas using wells, not soil sampling.

**Solution:** An August 28<sup>th</sup> Task order includes source soil assessment work. EPA soil assessment work needs to be initiated.

This Task Order had our original plan for soil sampling before the PECFA work was performed. We have discussed revising the soil sampling plan with LDF to perform a limited amount of borings in locations where the Tribe wants additional definition. This would provide some useful information in anticipation of soil removal, but is not absolutely vital at this time. I believe the Tribe wants and anticipates soil removal soon, but the presence of the highly contaminated groundwater beyond the soil source area would limit the success of the soil removal if the goal is lowering contaminant levels in groundwater. The Region plans to ask its contractor to provide an assessment of what additional information is needed and what remedial options exist for the heavily contaminated soil and groundwater source area.

### **Groundwater Investigation**

**Problem:** State Program has independently chosen a partial well network at depths different than EPA and Tribal advisement. The depths do not define the degree and extent of contamination.

The region did not expect that the first phase of well installation would completely define the plume. DNR has told EPA that they will have another set of wells installed after reviewing the sampling results.

The region has spoken to LDF about well locations that would fill in gaps in coverage. If for some reason DNR states that they will not install additional wells, the region can fund this work. The plan for the second phase of PECFA work will be discussed at the next technical meeting.

**Problem:** The data that has been provided is incomplete. There are missing well logs (8 of 14 have been provided), missing location and elevation data, and a lack of relevant field data on forms.

Correct. We do not have a complete set of field notes, well logs, etc., from the first phase of field work. Submission of information was addressed in the region's letter to the Kozaks dated January 4.

**Problem:** PECFA Contractor is not compliant with Tribal conditions of work.

The region agrees that REI has not complied with all Tribal conditions. We hope that compliance will improve with better communication and coordination between all parties.

**Therefore:** State Program incomplete well network does not determine degree and extent of contamination.

**Solution:** An August 28<sup>th</sup> Task order includes a EPA Tribal agreed monitoring well network as part of a groundwater investigation. EPA groundwater investigation work needs to be initiated.

See previous comment about the groundwater network. Our contractor, Bristol Environmental, stated that their drilling subcontractor had serious reservations about installing wells in winter at the site. It is known that drilling conditions may be difficult, requiring the addition of water to the borehole to keep heaving sands from entering. Using large amounts of water in sub-freezing or even sub-zero weather creates difficulties and delays, raising costs. The region is reluctant to schedule this work in winter.

The original EPA-funded task order included 14 wells. Most of these are now not necessary. LDF and the region agree that 5 wells, in addition to those already installed, would help define the plume at depth. We plan to put the installation costs into an amended task order if necessary but would like to see DNR's plans before we implement this work in order to save funds.

Also, the region received the report from our contractor regarding the private well sampling funded by EPA. We will share a copy of this report with LDF and coordinate the sharing of results with the residents and one business.